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EXAMINER

ROSSI, JESSICA

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 10/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/961,084

Applicant(s)

MCKAGUE, ELBERT LEE

Examiner

Jessica L. Rossi

Art Unit

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-- The MAILING DATE of this communication appears in the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 20-23 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-13 is/are allowed.
- 6) ☒ Claim(s) 1-9 and 14-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

*Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-19, drawn to a method of constructing a composite structure, classified in class 156, subclass 292.
  - II. Claims 20-23, drawn to a composite structure, classified in class 52, subclass 783.11.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the composite can be made by another and materially different process such as one where the stiffening panel is placed in contact with the skin panel and then forming elements (mandrels) are inserted between the panels (see US 3534463; column 4, lines 5-16), or, one where the bonding regions are created by adhesive disposed between the panels and not by curing the panels.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Mr. Beaton on 3/14/03 a provisional election was made **without** traverse to prosecute the invention of Group I, claims 1-19. Affirmation of this

election must be made by applicant in replying to this Office action. Claims 20-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Specification***

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the specification must be amended to include support for the limitations in lines 7-11 of claim 15 (the forming and heating steps).

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 5-6 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claim 5, it is unclear how the skin panel can be formed from a cured composite material when claim 1 states that the skin and stiffening panels are cured together. Applicants are asked to clarify. It is suggested to amend claim 5 to only include an uncured composite material.

Regarding claims 6 and 14, it is unclear what Applicants mean by disposing the stiffening panel by spraying a composite material outwardly from the forming elements. Do Applicants mean that material is sprayed outwardly from the forming elements, and hence away from the skin panel and forming elements, or do Applicant mean the material is sprayed on the surface of

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the skin panel and forming elements (as stated in the specification p. 8, lines 25-27). Applicants are asked to clarify. It is suggested to amend the claim in accordance with the latter interpretation.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-2, 5, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Mead.

With respect to claim 1, Mead is directed to making a composite structure having utility in various industries (i.e. aircraft; column 1, lines 15-16). The reference teaches positioning a plurality of forming elements 22 on a skin panel 12 formed from a composite material (column 2, lines 65-68) in a predetermined configuration (abstract), disposing a stiffening panel 14 formed from an uncured composite material (column 2, lines 65-68) outwardly from the forming elements to create a plurality of contact regions between the skin panel and stiffening panel (Figure 3), and curing the skin panel and stiffening panel to bond the same at their contact regions (column 2, lines 11-30).

Regarding claim 2, the reference teaches removing the forming elements 22 after curing (column 2, line 31).

Regarding claim 5, the reference teaches the skin panel being an uncured composite material (column 2, lines 25-30).

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Regarding claim 8, the reference teaches the forming elements being positioned in a corrugated configuration (Figure 3; abstract).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mead, as applied to claim 1 above, and further in view of Childress (US 5980665; provided in IDS).

Regarding claim 3, Mead is silent as to coupling the panels with fasteners. It is known in the art to make a composite structure useable in the aircraft industry by inserting fasteners 130 through panels 105, 110 having forming elements 115, 120, 125 therebetween, curing the composite structure, and removing the forming elements, as taught by Childress (Figure 7; column 14, lines 32-42), where the fasteners serve to reinforce and improve the impact shock resistance of the composite structure (abstract; column 11, lines 51-52). It would have been obvious to the skilled artisan at the time the invention was made to place fasteners through the panels of Mead because such is known in the art, as taught by Childress, where such reinforcement would improve the impact shock resistance of the composite structure.

Regarding claim 4, Childress teaches the fasteners being z-pins (column 14, lines 35-36).

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mead, as applied to claim 1 above, and further in view of the collective teachings of Sharp (US 3669821) and Wiens et al. (US 4368674).

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Regarding claim 4, Mead is silent as to disposing the stiffening panel by spraying. Selection of a particular method for forming the panel would have been within purview of the skilled artisan at the time the invention was made. However, it is known in the art to make a composite structure comprising a skin panel 27 and a stiffening panel 26 (Figure 5) both made from resin-impregnated fibers that are deposited by spraying (Figure 6), as taught by Sharp (column 2, lines 67-70; column 3, lines 3-5 and 36-37 and 55-57). It is also known in the art to make a composite structure comprising bonded panels having reinforcing elements therebetween wherein the outer panel is formed by spraying resin impregnated fibers onto the surface of the reinforcing elements and inner panel, as taught by Wiens (column 5, lines 28-39).

It would have been obvious to the skilled artisan at the time the invention was made to form the stiffening panel of Mead by spraying resin impregnated fibers onto the surface of the forming elements and skin panel because such is known in the art, as taught by the collective teachings of Sharp and Wiens, wherein this would eliminate the need to cut a pre-formed panel to the same size as the skin panel.

13. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mead, as applied to claim 1 above, and further in view of Effing et al. (US 5238725).

Regarding claim 7, Mead is silent as to the stiffening panel comprising discontinuous fibers. Selection of particular fibers would have been within purview of the skilled artisan at the time the invention was made. However, it would have been obvious to use discontinuous fibers because it is known in the art to make a composite structure useable in the aircraft industry from panels comprising a plurality of discontinuous fibers disposed in a resin matrix, as taught by Effing (Figure 4; column 1, lines 11-12 and 60-65).

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14. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mead, as applied to claim 1 above, and further in view of the collective teachings of Bleasdale (US 3419457) and Yasui (US 5904992).

Regarding claim 9, Mead is silent as to positioning the forming elements in a waffle configuration. Selection of a particular configuration would have been within purview of the skilled artisan. However, it would have been obvious to use a waffle configuration as an alternative to a corrugated one because imparting such a configuration to a stiffening panel is known in the art, as taught by the collective teachings of Bleasdale (Figure 1; column 2, lines 19, 23, 29-30, 33-35) and Yasui (Figure 13; column 6, lines 49-50).

15. Claims 15-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mead in view of Effing and the collective teachings of Sharp and Davis (US 4865788).

With respect to claim 15, all the limitations were addressed above with respect to claims 1, 5, and 7 except forming the stiffening panel on a tool having a configuration substantially the same as the predetermined configuration and heating the stiffening panel to a state sufficient to enable handling of the same while maintaining its configuration.

It is known in the art make a composite panel structure by bonding a stiffening panel 26 to a skin panel 27 by simultaneous curing of the panels wherein prior to contact the stiffening panel is placed on a tool surface having a corrugated configuration and heated to impart the configuration to the panel while partially curing the same, as taught by Sharp (Figure 5; column 3, lines 2-10). This partial curing allows the shape of the panel to be maintained while it is removed from the mold and placed into contact with the uncured skin panel before curing of the



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panels, as taught by the collective teachings of Sharp (column 3, lines 11-16) and Davis (column 1, lines 27-35).

It would have been obvious to the skilled artisan at the time the invention was made to place the stiffening panel of Mead on a tool having the predetermined configuration and heat the panel to a state sufficient enough to enable handling of the same while maintaining its configuration because such is known in the art, as taught by the collective teachings of Sharp and Davis, wherein only the claimed benefits would be achieved (Sharp, column 3, lines 11-16; Davis, column 1, lines 27-35).

Regarding claim 16, the reference teaches removing the forming elements 22 after curing (column 2, line 31).

Regarding claim 18, the reference teaches the forming elements being positioned in a corrugated configuration (Figure 3; abstract).

16. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mead, Effing, and the collective teachings of Sharp and Davis as applied to claim 1 above, and further in view of Childress.

Regarding claim 17, Applicants are directed to paragraph 11 above.

17. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mead, Effing, and the collective teachings of Sharp and Davis as applied to claim 1 above, and further in view of the collective teachings of and Yasui.

Regarding claim 19, Applicants are directed to paragraph 14 above.

***Allowable Subject Matter***

18. Claim 10-13 are allowed.

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With respect to claim 10, the prior art fails to teach or suggest a method of making a composite structure comprising disposing an uncured stiffening panel outwardly from a skin panel, **partial-curing the skin panel and stiffening panel** to create a plurality of first contact regions between the same, coupling the panels with **fasteners** proximate the first contact regions, and **final curing** the panels to bond the same at the first contact regions.

It is known in the art to bond a stiffener panel 34 to a skin panel 32 by curing wherein both panels are partially cured before placing them into contact with each other, as taught by Bird (US 6110567). It is also known in the art to stack a plurality of partially-cured (B-stage) fiber reinforced composite panels, insert fasteners through the stack, and then cure the stack, as taught by the collective teachings of Childress (US 5980665; column 15, lines 36-38) and Chase (US 3837985; column 2, lines 43-46 and 61-63; column 3, lines 56-61). However, absent any teaching in the art, the skilled artisan would not be motivated to partially cure the panels **after** they are placed into contact with each other and before fasteners are inserted through the same.

Regarding claims 11-13, they depend from claim 10.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jessica L. Rossi** whose telephone number is **703-305-5419**. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael W. Ball can be reached on 703-308-2058. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jessica L. Rossi  
Patent Examiner  
Art Unit 1733



jlrr



Michael W. Ball  
Supervisory Patent Examiner  
Technology Center 1700